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**Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	-	387.325	381.528	516.971	0.000	516.971	448.551	274.099	200.832	202.589	0.000	2,411.895
644183: <i>Hypersonic Attack Cruise Missile (HACM)</i>	-	387.325	381.528	516.971	0.000	516.971	448.551	274.099	200.832	202.589	0.000	2,411.895
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**A. Mission Description and Budget Item Justification**

Hypersonic Attack Cruise Missile (HACM) is a hypersonic air-launched weapon that will enable the U.S. to hold fixed, high value, time-sensitive targets at risk in contested environments from standoff distances. The Air Force is developing an air-launched boost-glide hypersonic weapon - the AGM-183A Air-launched Rapid Response Weapon (ARRW) - as well as the air-breathing HACM capability. ARRW and HACM are complementary. HACM offers a smaller form factor than ARRW for fighter integration and expanded bomber capacity, and thereby imposes cost on potential adversaries with additional complexity with vastly different trajectories than boost glide.

The program leverages Southern Cross Integrated Flight Research Experiment (SCIFiRE) investment, a bi-lateral U.S./Australian air-breathing hypersonic cruise missile prototyping effort which is a prelude to HACM. The HACM program will integrate advanced technologies and mature designs into an All-Up Round (AUR) prototype that will demonstrate a field-able long range prompt strike capability. HACM will design, develop, manufacture, and test (testing will occur in both the U.S. and Australia) a number of prototype vehicles to inform future HACM acquisition decisions. HACM will mature hypersonic technologies and processes to include: subsystem integration, infrastructure and testing advancements, Digital Engineering (DE), Weapons Open Systems Architecture (WOSA), Modeling and Simulation (M&S), analytics, and high performance computing environments.

Implements Digital Acquisition tenants of Open, Agile, and Digital; builds and establishes industrial base innovation around the program's enterprise for modularity and adaptability for the life cycle of the weapons system. Leverages common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, data management, digital environments, networks, facilities, and security infrastructure upgrades supporting development of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions. Expands program office staff, facilities, and security infrastructure to support the required classification levels for this program's activities. Engages with DoD, DAF, and industry stakeholders to refine threat analysis, refine inventory requirements, and plan upgrade requirements. Capitalizes on and incorporates successful laboratory research and development efforts applicable to this program's capability.

The total cost of the Hypersonic Attack Cruise Missile Middle Tier of Acquisition effort is 1,868.6 million, including RDT&E and procurement of prototype units. The HACM RP program is fully funded across the Future Years Defense Program..

This Program Element is not a new start. HACM was previously listed under both PE 0604033F/project 643883 and PE 0604183F/project 644183 and was consolidated to this PE (0604183F/project 644183) during the FY 2023 Omnibus Appropriation Act.

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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program's funds would be in addition to the civilian pay expenses budgeted in program element 0605828F. In PY 6.520M was expended for civilian pay expenses in this program element, and in CY 12.135M is forecasted for civilian pay expenses in this program element.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver HACM for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605828F.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>
Previous President's Budget	423.359	381.528	557.138	0.000	557.138
Current President's Budget	387.325	381.528	516.971	0.000	516.971
Total Adjustments	-36.034	0.000	-40.167	0.000	-40.167
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-23.321	0.000			
• SBIR/STTR Transfer	-12.713	0.000			
• Other Adjustments	0.000	0.000	-40.167	0.000	-40.167

**Change Summary Explanation**

This Program Element is not a new start. HACM was previously listed under both PE 0604033F/project 643883 and PE 0604183F/project 644183 and was consolidated to this PE (0604183F/project 644183) during the FY 2023 Omnibus appropriation Act.

FY 2023 funding decreased by -21.929M as result of funds re-phased under the Omnibus Reprogramming Request. -1.392M is a result of a Below Threshold Reprogramming action.

FY 2025 funding decreased by -40.167 million due to +21.929M re-phase from FY 2023, and -62.096M to align with other AF priorities. The FY 2025 funding request was reduced by -20.904 million to account for the availability of prior year execution balances.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<b>Title:</b> HACM Development	292.838	303.923	445.808

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2025 Air Force		<b>Date:</b> March 2024		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>		<b>R-1 Program Element (Number/Name)</b> PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<p><b>Description:</b> A single performer purchasing hardware and completing a critical design, and initial long-lead flight test asset hardware, to include aircraft integration assets.</p> <p><b>FY 2024 Plans:</b> Effort will utilize a single industry performer to build upon preliminary design activities and mature HACM to critical design. The effort will continue model-based engineering activities and the DE ecosystem to complete critical design analysis, design verification testing, systems integration, lab development, initial qualification testing, initial flight test hardware orders, aircraft integration assets, and WOSA compliance evaluation.</p> <p><b>FY 2025 Plans:</b> This effort will continue model-based engineering activities in the DE ecosystem to complete the HACM critical design. Effort will also include additional design verification testing, systems integration, subsystem qualification, and integration on the F-15E and F/A-18F platforms.</p> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> FY 2025 funding increased compared to FY 2024 by \$141.885M due to phasing of prime contract requirements leading up to a Critical Design Review, in addition to Block 2 efforts (Previously named Risk Reduction.) Further details of this activity are classified.</p>				
<p><b>Title:</b> Integration, Qualification, and Test</p> <p><b>Description:</b> This effort includes the government costs associated to assembly, integration and test of subsystems for qualification testing as well as prototype systems for system qualification, ground test and flight testing. The effort includes the planning, execution and analysis to complete the defined HACM test strategy.</p> <p><b>FY 2024 Plans:</b> Effort continues the assembly, integration and test of subsystems for qualification testing as well as prototype systems for system qualification, ground test and flight testing.</p> <p><b>FY 2025 Plans:</b> Effort will conduct additional subsystem qualification testing and complete integration, assembly, test, and checkout of the All-Up-Round system. Effort will also include initial free-flight testing of HACM prototypes.</p> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> FY 2025 funding decreased compared to FY 2024 by \$15.952M due to phasing of testing/qualification requirements as system processes through the critical design phase.</p>		27.308	52.653	36.701
<p><b>Title:</b> Program Support</p>		67.179	24.952	34.462

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<p><b>Description:</b> Program Support Cost (PSC) includes contractor services: Engineering, Professional, and Administrative Support Services (EPASS) and or/other contract support. May also include mission planning, travel, Government Purchase Card (GPC), Direct Cite Authority (DCA) civilian pay, costs associated to meet future security upgrades/requirements, and/or other government costs.</p> <p><b>FY 2024 Plans:</b> Efforts include DE, WOSA development/support, DE Infrastructure, mission planning, tech orders and DCA civilian pay.</p> <p><b>FY 2025 Plans:</b> Efforts include DE, WOSA development/support, DE Infrastructure, mission planning, tech orders, travel, and DCA civilian pay.</p> <p><b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> FY 2025 funding increased compared to FY 2024 by \$9.510 due to mission planning activities and civilian pay expenses.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	387.325	381.528	516.971

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• MPAF 02 HACM00: <i>Hypersonic Attack Cruise Missile</i>	-	-	-	-	-	-	246.092	251.376	256.376	0.000	753.844

**Remarks**  
\* Production funding will be used to buy post-MTA assets if requirement exists and acquisition transition strategy is approved.

**E. Acquisition Strategy**  
The program leverages the SCIFiRE investment, a bi-lateral U.S. / Australia effort which matures air-breathing cruise missile technology. Through SCIFiRE, HACM leverages efforts from the DARPA Air Force Hypersonic Air-breathing Weapon Concept (HAWC). The HACM prototype will demonstrate a multi-mission weapon concept to be fielded as a long range prompt strike capability. Includes scope to develop/test/demonstrate prototype weapon through Digital Model-Based System Engineering (MBSE) process, implementing WOSA and Agile Software Development. The program will prioritize integration on the F-15E platform to enable quick entry into flight test.

Acquisition Strategy approved Dec 2021 which designated HACM as a Section 804 Middle Tier of Acquisition (MTA) Pathway (Rapid Prototyping). In Feb 2022 the OSD MTA Advisory Board concurred with HACM designation as a Rapid Prototyping MTA Pathway. The Air Force awarded a Cost Plus Fixed Fee (CPFF) contract in Sep 2022 to Raytheon Technologies to procure all long lead parts, materials and labor for HACM Critical Design Review, development, integration, qualification, and flight testing of AURs.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i>	
<p>In addition to the baseline rapid prototyping effort, and in accordance with an FY23 Program Decision Memorandum (PDM), the program will advance subsystem technology to enhance system capability and conduct testing to demonstrate the additional capability. Block 2 contract awarded Dec 2023. Further details of this activity are classified.</p> <p>To prepare for a future production program that meets warfighter desired quantities in relatively short timelines, the program will begin making targeted investments in the hypersonic cruise missile industrial base. These investments will ensure the industrial base can handle a ramp to full rate production that supports warfighter needs. Investments must begin in advance of a future production program to prevent significant delays in delivering assets to the field.</p>		

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604183F / Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)	<b>Project (Number/Name)</b> 644183 / Hypersonic Attack Cruise Missile (HACM)
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<b>Product Development (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HACM Prime Contractor Support, Analysis, and Development	C/CPFF	Raytheon: Tucson, AZ : TBD	-	292.838	Mar 2023	303.923	Dec 2023	352.020	Dec 2024	-		352.020	Continuing	Continuing	-
Block 2 Efforts	SS/CPFF	Raytheon: Tucson, AZ : TBD	-	-		-		93.788	Jul 2025	-		93.788	Continuing	Continuing	-
<b>Subtotal</b>			-	292.838		303.923		445.808		-		445.808	Continuing	Continuing	N/A

**Remarks**  
 \*Block 2 (Previously called Risk Reduction) contract awarded Dec 2023.  
 \*\*FY 2023 and FY 2024 Block 2 amounts were included in "HACM Prime Contractor Support, Analysis, Technical Risk Reduction, and Development" line.

<b>Support (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development & Prototyping	C/Various	Multiple: TBD: Various : TBD	-	40.318	Mar 2023	9.210	Dec 2023	15.125	Dec 2024	-		15.125	Continuing	Continuing	-
Direct Cite Authority Civilian Pay	Allot	Not specified: TBD : TBD	-	6.520	Oct 2022	8.381	Oct 2023	12.423	Oct 2024	-		12.423	Continuing	Continuing	-
<b>Subtotal</b>			-	46.838		17.591		27.548		-		27.548	Continuing	Continuing	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test & Evaluation	C/TBD	Multiple: TBD: Various : TBD	-	27.308	Mar 2023	52.653	Dec 2023	36.701	Dec 2024	-		36.701	Continuing	Continuing	-
<b>Subtotal</b>			-	27.308		52.653		36.701		-		36.701	Continuing	Continuing	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force** **Date:** March 2024

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<b>Management Services (\$ in Millions)</b>				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Management Services	C/TBD	Multiple: TBD: Various : TBD	-	20.341	Oct 2022	7.361	Oct 2023	6.914	Oct 2024	-		6.914	Continuing	Continuing	-
<b>Subtotal</b>			-	20.341		7.361		6.914		-		6.914	Continuing	Continuing	N/A

**Remarks**  
Includes A&AS support, Travel, and GPC requirements.

	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	387.325	381.528	516.971	-	516.971	Continuing	Continuing	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2025 Air Force</b>		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i>	<b>Project (Number/Name)</b> 644183 / <i>Hypersonic Attack Cruise Missile (HACM)</i>

	FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Hypersonic Attack Cruise Missile (HACM)</i></b>																												
Critical Design																												
HACM Development																												
Integration, Qualification, and Test																												
Block 2 Development																												
AUR Free-Flight Testing																												
Follow-On Development																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i>	<b>Project (Number/Name)</b> 644183 / <i>Hypersonic Attack Cruise Missile (HACM)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Hypersonic Attack Cruise Missile (HACM)</i></b>				
Critical Design	1	2023	2	2025
HACM Development	1	2023	2	2027
Integration, Qualification, and Test	1	2023	2	2027
Block 2 Development	1	2024	1	2029
AUR Free-Flight Testing	1	2025	2	2027
Follow-On Development	1	2026	4	2029